

CLAIMS

1. A device having a contact interface for establishing an electrical connection with an electrical component, said contact interface comprising:
 - at least one loading fiber;
 - at least one conductor having at least one contact point, wherein said at least one conductor is coupled to a loading fiber; and
 - wherein an electrical connection can be established between said at least one contact point of said at least one conductor and said electrical component when said device is engaged with said electrical component.
2. The device of claim 1, wherein said device comprises a burn-in socket device.
3. The device of claim 1, wherein said device comprises a test socket device.
4. The device of claim 1, wherein said device comprises a circuit board.
5. The device of claim 1, wherein said device comprises at least one of the following: a processing unit, a memory unit or an expansion card.
6. The device of claim 1, wherein electrical connections can be established between said device and a plurality of electrical components.

7. The device of claim 1, said contact interface of said device further comprising:
 - a first conductor and a second conductor;
 - a first loading fiber, wherein said first and second conductors are coupled to said first loading fiber; and
 - a tensioning guide disposed between said first and second conductors, wherein said loading fiber comes into contact with said tensioning guide when said device is engaged with said electrical component.
8. The device of claim 7, wherein said tensioning guide is comprised of a support column.
9. The device of claim 7, wherein said tensioning guide is comprised of a faceplate.
10. The device of claim 1, wherein said at least one conductor is woven with said loading fiber.
11. The device of claim 1, wherein said at least one conductor comprises a shaped contact and a conductive lead.
12. The device of claim 1, wherein a plurality of loading fibers form a grid having a plurality of intersections and wherein said at least one conductor is coupled to said at least one loading fiber at or near an intersection of said grid.

13. The device of claim 1, wherein a plurality of loading fibers form an array having at least two layers of loading fibers and wherein said at least one conductor is coupled to a loading fiber of a first layer of said array and to a loading fiber of a second layer of said array.
14. The device of claim 1, wherein said at least one loading fiber is comprised of a non-conducting material.
15. The device of claim 1, wherein said at least one loading fiber is comprised of an elastic material.
16. The device of claim 1, wherein said at least one loading fiber is comprised of at least one of the following: nylon, fluorocarbon, polyaramids, polyamids, conductive metal or natural fiber.
17. The device of claim 1, wherein said at least one conductor has a diameter between approximately 0.0002 and approximately 0.0100 inches, inclusive.
18. The device of claim 1, said contact interface of said device further comprising:
an insulator disposed between a first conductor and a second conductor to electrically isolate said first conductor from said second conductor.
19. The device of claim 1, said contact interface of said device further comprising:

at least one tensioning spring; and
wherein an end of said at least one loading fiber is coupled to said at least one tensioning spring.

20. The device of claim 1, said contact interface of said device further comprising:
at least one floating end plate; and
wherein an end of said at least one loading fiber is coupled to said at least one floating end plate, and wherein a portion of said electrical component engages said at least one floating end plate when said device is engaged with said electrical component.
21. The device of claim 1, further comprising:
a high-frequency modulator that is coupled to said at least one loading fiber,
wherein said high-frequency modulator is capable of exciting said at least one loading fiber at a fundamental frequency.
22. A device having a contact interface for establishing electrical connections with an electrical component, said contact interface comprising:
a plurality of loading fibers;
a plurality of conductors, wherein each conductor is coupled to at least one loading fiber; and
wherein electrical connections can be established between at least a portion of said plurality of conductors and said electrical component when said device is engaged with said electrical component.

23. The device of claim 22, wherein said device comprises a burn-in socket device.
24. The device of claim 22, wherein said device comprises a test socket device.
25. The device of claim 22, wherein said device comprises a circuit board.
26. The device of claim 22, wherein said device comprises at least one of the following: a processing unit, a memory unit or an expansion card.
27. The device of claim 22, wherein said electrical component comprises a plurality of contacts, and wherein electrical connections can be established between at least a portion of said plurality of conductors and said plurality of contacts of said electrical component when said device is engaged with said electrical component.
28. The device of claim 27, wherein said plurality of contacts of said electrical component comprises a ball grid array.
29. The device of claim 27, wherein said plurality of contacts of said electrical component comprise a surface mount array.
30. The device of claim 27, wherein said plurality of contacts of said electrical component comprises a pin grid array.

31. The device of claim 22, said contact interface of said device further comprising:
 - a plurality of tensioning guides, wherein a tensioning guide is disposed on at least one side of each conductor, and wherein at least a portion of said plurality of loading fibers contact said plurality of tensioning guides when said device is engaged with said electrical component.
32. The device of claim 31, wherein tensioning guides are disposed on two sides of each conductor.
33. The device of claim 31, wherein said plurality of tensioning guides are comprised of a plurality of support columns.
34. The device of claim 31, wherein said plurality of tensioning guides form a grid structure comprised of a plurality of high-tensioned fibers.
35. The device of claim 22, said contact interface of said device further comprising:
 - a plurality of tensioning springs; and
 - wherein each loading fiber is coupled to a tensioning spring.
36. The device of claim 22, said contact interface of said device further comprising:
 - at least one floating end plate; and
 - wherein an end of each loading fiber is coupled to said floating end plate.

37. A device for testing the electrical integrity or functionality of an electrical component, said device comprising:
- at least one loading fiber;
- a plurality of conductors, wherein each conductor is coupled to at least one loading fiber;
- a plurality of tensioning guides, said plurality of tensioning guides being disposed on at least one side of each said conductor;
- wherein electrical connections can be established between at least a portion of said plurality of conductors and said electrical component when said device is engaged with said electrical component: and
- wherein at least a portion of said at least one loading fiber contacts said plurality of tensioning guides when said device is engaged with said electrical component.

38. The device of claim 37, wherein said device comprises a burn-in socket device.
39. The device of claim 37, wherein said device comprises a test socket device.

40. A method for establishing electrical connections between a first electrical component and a second electrical component, wherein said first electrical component includes at least one conductor and at least one loading fiber and said second electrical component includes at least one contact, said method comprising:
 - coupling said at least one conductor to said at least one loading fiber; and
 - engaging said first electrical component with said second electrical component so that said at least one contact of said second electrical connector causes a deflection of at least a portion of said at least one loading fiber of said first electrical component, wherein said deflection causes said at least one loading fiber to exert a force that maintains said at least one conductor against said at least one contact.
41. The method of claim 40, wherein said coupling of said at least one conductor to said at least one loading fiber comprises winding said at least one conductor around a portion of said at least one loading fiber.
42. The method of claim 40, further comprising:
 - placing a tensioning guide between a first conductor and a second conductor, wherein said at least one loading fiber comes into contact with said tensioning guide when said first electrical component is engaged with said second electrical component.
43. The method of claim 40, further comprising:
 - coupling an end of said at least one loading fiber to a tensioning spring.

44. The method of claim 40, further comprising:
- arranging a plurality of loading fibers as a grid having a plurality of intersections, wherein said at least one conductor is coupled to at least one loading fiber at or near an intersection.
45. The method of claim 40, further comprising:
- arranging a plurality of loading fibers as an array having at least two layers of loading fibers, wherein said at least one conductor is coupled to a loading fiber of a first layer and to a loading fiber of a second layer.
46. The method of claim 40, further comprising:
- disposing an insulator between a first conductor and a second conductor.
47. A method for establishing electrical connections between a test device and an electrical component, wherein said test device includes a plurality of conductors and at least one loading fiber and said electrical component includes a plurality of contacts, said method comprising:
- coupling said plurality of conductors to said at least one loading fiber; and
- engaging said test device with said electrical component so that said plurality of contacts of said electrical connector causes a deflection of at least a portion of said at least one loading fiber of said test device, wherein said deflection causes said at least one loading fiber to exert a force that maintains said plurality of conductors against said plurality of contacts.

48. The method of claim 47, wherein said test device is capable of testing the electrical integrity or functionality of said electrical component.
49. The method of claim 47, wherein said coupling of said plurality of conductors to said at least one loading fiber comprises winding said plurality of conductors around a portion of said at least one loading fiber.
50. The method of claim 47, further comprising:
placing a tensioning guide between a first conductor and a second conductor,
wherein said at least one loading fiber comes into contact with said tensioning guide
when said test device is engaged with said electrical component.
51. The method of claim 47, further comprising:
coupling an end of said at least one loading fiber to a tensioning spring.
52. The method of claim 47, further comprising:
arranging a plurality of loading fibers as a grid having a plurality of intersections,
wherein said plurality of conductors are coupled to at least one loading fiber at or near an intersection.
53. The method of claim 47, further comprising:

arranging a plurality of loading fibers as an array having at least two layers of loading fibers, wherein each conductor is coupled to a loading fiber of a first layer and to a loading fiber of a second layer.